

MEMO TO FILE:

6/25/2015

Re: Site visit to Army Corps of Engineers – Lower Monumental Dam and Ice Harbor Dam

Purpose of site visit was to tour facilities and understand operations and discharges in anticipation of developing NPDES general permit for hydroelectric facilities.

Tour was arranged by Don Redman, Environmental Compliance Officer for the Walla Walla District of ACE. Susan Poulsom and Dru Keenan toured the facilities for EPA R10.

Site visit was conducted on June 16, 2015 (Lower Monumental Dam) and June 17th (Ice Harbor Dam)

Day 1: Lower Monumental Dam Kahlotus, WA on the Snake River.

- 1) Initial introductory meeting with Don Redman, Kimberley ?, Operations Manager for the Lo Mo Dam, Dave Needham, ECO of the power plant, (Dave ?), operations engineer Dam. Two staff members from the Chelan PUD also attended for informational purposes. The PUD understood that they would not be covered under an EPA issued permit. EPA covered their interests in viewing the facility; explained the NDPEs permit and plans to develop a general permit to cover hydro-electric facilities; and that were in the process of developing the GP for Idaho hydro-electric facilities. Timeframe was several years before issuance of permit for the Corps dams. The Corps provided an overview of the operations and provided diagrams in prep for tour.

Discussed main pollutant stream - - oil and grease, which are necessary to lubricate the moving parts of the turbine, generators, transformers, and navigation lock. Discussed what potential there was to reduce or eliminate the use of lubricants. Chelan PUD was investigating greaseless turbines and EALs (environmentally alternative lubricants). The opportunity to consider replacing the present turbine with a greaseless turbine is when a turbine is 'un-stacked' for maintenance/repair. This is a very infrequent occurrence, so opportunity to replace the turbine would be rare. Nevertheless, the greaseless turbine is a proven alternative to current turbines which require ongoing lubrication with grease. EALs are also a proven alternative to petroleum based lubricants and in use at many facilities. A concern with both alternatives is one of longevity - - effectiveness of either alternative is not as long as petroleum based lubricants and turbines requiring lubrication.

- 2) The main parts of the dam of relevance to permitting are: the powerhouse (contains the turbines, generators, and transformers), the navigation lock, and the fish passage facilities. There are 6 generators/turbines at Lower Monumental Dam, two fish passage facilities, and 1 navigation lock.
- 3) The discharges from the Powerhouse include: sump drainage water, and non-contact cooling water. The non-contact cooling water is from water used to cool the generators.

Each generator has its own NCW discharge to the tailrace. In addition there is NCW for the emergency diesel generator, which also has its own discharge to the tailrace. There are two large sumps at Lo Mo: un-water sump, which serves to collect water from un-watering the turbine pits; and drainage sumps, which collect water from various sources where water has leaked/seeped in- -floor drains, turbine pits, transformers.

- a. Un-watering sump: Water is collected in this sump from the un-watering of the turbine pit to allow for maintenance. This is an infrequent operation. The make-up of this water is river water and unlikely to contain any material/pollutant. Water is pumped out of the sump and discharged into the tailrace.
 - b. Drainage sump: Water is collected from a variety of sources - -floor drains, turbine pits, transformers. Water is always seeping into the dam and needs to be drained. This water is river water, but it is water that comes in contact with machinery (turbines, transformers) and debris from running along floors. Therefore, this water is contaminated with oil and grease. The water from this sump is pumped out and discharged into the tailrace.
- 4) The discharges from the Navigation Lock: Water discharges from Lock contain oil and grease as water comes in contact with lubricated wire ropes, motors, and gate mechanisms. Discharge of water from the Lock goes to the tailrace.
- 5) The discharges from Fish Passages: There are two fish passage features to the dam, the adult fish passage ladder on the south side of the dam and the juvenile fish passage facility on the north side of the dam. There are two sources of discharges from the juvenile passage facility (JFF). The first source is the discharge from the anesthetic tank, which is used to anesthetize a sample of juvenile fish for measurement and tagging. The water from this tank is discharged to the river via a sand filter. This discharge only occurs during out migration season generally from early spring to fall. The volume of anesthetic is small. The second discharge is water from the holding tanks. The juvenile fish are held in a tank and then transported to either barge or truck. This discharge is made up of river water - -no feed, antibiotics, etc.
- 6) Sources of Oil and Grease: The generator's thrust bearings (and other bearings?), which must be lubricated with oil; the turbine's wicket gates, which must be lubricated grease. The navigation lock's gates and wire ropes are all greased. Wire ropes are throughout the powerhouse and they are greased.

Day 2: Ice Harbor Dam Burbank, WA on the Snake River

- 1) Introductory meeting with the Glen Smith, Operations Project Manager and Steve Heninger, ECO, along with Don Redman. Explained purpose for the site visit, the NPDES general permit process and timing. The Corps raised a number of issues. They wanted to know what Washington Dept of Ecology (WDOE) requires in their 401 cert of hydroelectric facilities.

They wanted to know what the difference is between 401 and 401. We promised to send the information to Heninger. Discussed their requirements under the Spill Prevention, Control, and Countermeasures (SPCC). Ice Harbor had a large spill of oil/grease in 2014 and has had others in the past. They did not have a monitoring device or warning system on the mechanism providing lubricant to one of the transformers (or generators).

Discussed BMPs that could be included in the permit. Suggestions include:

- BMP for provisions similar to ones required under SPCC.
- BMP requiring a study on how to account for all the oil/grease used at the facility.
- BMP for hydrocarbon sensor on the discharges of all drainage sumps.
- Requirement for oil/water separators in the drainage sumps
- Requirement for continuous monitors for flow, pH, Temperature, oil
- Operate units only under normal conditions. When op under abnormal conditions there is more oil lost and it goes out the tailrace. Look at the Vessel General permit for clause.

Discussed monitoring, sampling and permit application. Some of the outfalls could not be sampled because lack of access. In those cases samples were taken at first point of access closest to the discharge point. With regard to flow measurements on the application, they had to use plate readings and there were no flow monitors. They suggested we work with Redman when developing monitoring locations. Some outfalls are not physically possible to sample or monitor.

The Corps provided us with diagrams of the dam. The design of Ice Harbor is different from the other lower Snake River Corps Dams in that it has more outfalls than the others but it has the same types of discharges: NCW, un-watering sump, numerous drainage sumps, navigation lock discharges, and fish passage and juvenile fish facility. We toured the powerhouse, lock, and the south side fish passage facility.